Earth Science®

Rockhounds' NATIONAL Magazine

"A New Look At An Old Rock" (See page 93)

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CONTENTS, JUNE ISSUE, 1959

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Editors Memo Pad

GETTING TOGETHER: Man is naturally a gregarious animal, and woman,—she is often more so than man. Rockhounds it seems are no exception to this observation, and homo-petrihund, (a new species), is often the most gregarious of the race.

It is good that they are, for our "get-togethers" at conventions, rock shows, club and committee meetings, field trip occasions and basement rendezvous, are often some of the most enjoyable experiences of our lives.

Such occasions are always relaxing, worthwhile, and frequently educational, for when one has the opportunity to visit leisurely with likeminded people he may usually learn something new, which may be of interest or value concerning his hobby, or perhaps about some unusual specimen he may have in his collection.

At the moment, as you may have already guessed, we have in mind the importance of our making great effort to attend one of our regional conventions, or perhaps some sub-regional *"gemorama"*, (a new glorified name for a rock show), where one may widen his friendships, or broaden his knowledge of more distant regions and collecting areas.

There are so many ways that one may be benefited by attending such meetings and "get-togethers", that we may list only a few of them. In the first place one has the opportunity of renewing old friendships, as well as making many new ones,—and the friendly visits, "gemütlichkeit" if you please, will perhaps be the experience longest to be remembered connected with such an event.

Here, too, one will have the opportunity of hearing interesting talks and lectures by speakers well versed in their respective fields; of trading (swapping) his surplus specimens with others who will be equally glad for the exchange; the chance for selecting and buying many fine or unusual specimens from the dealers who are present, that he could not obtain elsewhere so easily; to say nothing of viewing and studying dozens of splendid exhibits shown by clubs and individuals, and also learning of new techniques, tools and lapidary equipment used in the hobby,—etc., etc.

The whole matter, possibly may be best summed up in the words of Marcus Aurelius (Roman Emperor, A.D. 121-180) who said,

> "Thou hast made me known to
> friends whom I knew not.
> Thou hast given me seats in
> homes not my own.
> Thou hast brought the distance
> near
> And made a brother of the
> stranger."

1959 CONVENTION DATES:

Two Down and Four to Go!

Get these dates on your calendar.

Midwest Federation	June 18-21	Springfield, Ohio
California Federation	June 26-28	San Mateo, Calif.
Eastern Federation	July 16-19	Boston, Mass.
Northwest Federation	Sept. 5-7	Portland, Oregon*

*Host to the American Federation Convention

BEGIN MAKING YOUR PLANS AT ONCE TO ATTEND AT LEAST ONE SHOW.

BY THE TIME this is off the press two of our great 1959 shows will be a matter of history; the Rocky Mountain Federation held at Wichita, Kansas, April 24-26th, and the Texas Federation at McAllen, Texas, on May 1-3, 1959. We will have news reports on these fine shows in our next issue—but as noted above, there are at least four more to go, so LET'S GO! Start making plans at once, you will never be sorry.

* * * *

FLINT RIDGE: One of the special events which is to take place at the Midwest Convention at Springfield, Ohio is the post-convention field trip to the famous Flint Ridge collecting areas of Southern Ohio, where the day will be spent gathering specimens in the field. The caravan will leave the convention site (Clark County Fair Grounds) about 8:00 o'clock on the morning of June 21st (Sunday), and follow to the location previously arranged for and prepared (plowed) for collecting, a distance of nearly one hundred miles.

Here further directions will be given, furnished by the host society, following which each individual party will be on its own, to collect as much or as long as they may wish, and from there each will return to Springfield, or depart to their respective homes, direct from the "Ridge." Maps of the itinerary will be given

out to the party before leaving Springfield. Those who cannot come to the Convention for the full time are urged to come for the week-end collecting if they can make it, no previous arrangements being necessary.

* * * *

LETTERS:

Mountain View, Calif.

Dear friends:—Time to renew my subscription, so I enclose $2.00 which you have undoubtedly already found. This old-time printer doubly appreciates "Earth Science," because he understands something of the sweat that goes into the production of a magazine. I enjoy your product.

Cordially yours,

Arthur W. Browne

Reply:—Yes, getting out a publication of any kind means lots of hard work, but it is fun when we receive letters such as yours. B.H.W.

TO THE YOUTH OF THE WORLD

(Five to eighty-five)

Why collect souvenirs? Why collect anything?
Memory is short—souvenirs revitalize it.
What is a genuine souvenir?
Nothing is more genuine, than the earth itself.
Why have a hobby?
A hobby cleanses everyday doldrums.

Live life to the fullest, travel all you can—see all you can—learn all you can—and collect all you can—sand, rocks and minerals, gems, micromounts, or what you will.

I personally collect sand specimens, and will gladly exchange with all, just send a small envelope full, correctly labeled, and I will return specimen for specimen to you.

Now you Rock-hounds, don't look down your noses at us Sand-hogs. We all collect the same thing, "The Good Earth," our choice just being smaller particles, that's all.

Yours, until the sands of time run out,

Lewis R. Berlepsch,
President, Lor-Lew Design

ALLEN LAPIDARY SOLD TO UNDERWOODS

The Allen Lapidary Equipment Company of Los Angeles, California, has been sold to the Belmont Lapidary Supply of 740 El Camino Real, Belmont, California. The entire equipment and stock in trade of the Allen Lapidary Equipment Company was acquired by Lloyd and Florence Underwood, Belmont Lapidary Supply, who retain the original Allen name and will operate as a subsidiary firm of Belmont Lapidary Supply. The Underwoods are well known to the trade, and have moved the business to Belmont, California.

* * * *

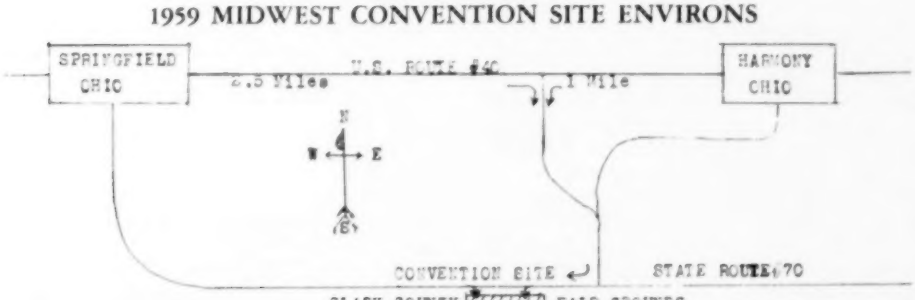
OUR AUTHORS: Robert H. Shaver, author of "A New Look At An Old Rock" is chief of the Paleontological Division of the Indiana State Geological Survey. The excellence of the article speaks for itself, and it will long rank as a classic in its field. Thank you Dr. Shaver.

J. W. Pagnucco, who brings us the story of "Flint Ridge" famous ancient collecting area of Ohio, writes as one who has first hand knowledge of his subject, and so he has, as it is old stamping ground to him. He is Vice President of the Midwest Federation, and is outstanding as a creator of Earth Science enthusiasm among his associates in the Cincinnati Mineral Society.

* * * *

OUR COVER PHOTO: "The Walsh Quarry" at Bedford, Indiana, typical of the quarries in the Oolitic limestone areas of southern Indiana. While other quarries are at Bloomington, the stone is usually called "Bedford" limestone, by which name it is generally known to the building trade. Picture shows levels from which the blocks are taken, and the power drills for breaking the blocks loose from the ledge. The exhausted part of the quarry is soon filled with water. (See article,—page 93) *Tribune Photo.*

1959 MIDWEST CONVENTION SITE ENVIRONS



Book Reviews

PLEISTOCENE MAN AT SAN DIEGO: This book contains 400 pages of fascinating reading as well as text material for the student. Published by the John Hopkins Press and sells for $8.00.

Everybody is interested in learning more about Early Man in America and it seems that each new investigation and research dates the first man back farther into the past. Dr. George F. Carter, Professor of Geography at John Hopkins University indicates that the evidence now points to 100,000 years since man came to America.

In his recent book Pleistocene Man at San Diego, he combines his own knowledge and that of many other authorities of geology, geomorphology, soils and climatic changes within a framework of archaeological knowledge to produce a workable geochronology of the San Diego area.

It is an excellent book which appeals to those interested in Earth Science since it covers so many phases of this very broad field.

W.H.A.

THE ROCK-HUNTER'S FIELD MANUAL. By D. K. Fritzen. Published by Harper & Brothers, New York. 1959. 207 pp. $3.50.

This book was written primarily for the amateur with the thought in mind of giving the average Rock-Hunter a simplified and accurate system by means of which he would be able to classify by far the greater number of all specimens found. No references are made to chemical formulas and tests which would require some knowledge of chemistry.

The book comprises two sections, namely, a color key under which minerals can be identified according to color, along with such other physical properties as luster, streak, hardness, comparative weight, and cleavage or fracture. Names are arranged in alphabetical order and duplicate entries are made under different color headings when mineral appears in more than one color.

A second section of the book is designed to give the amateur more general knowledge of minerals. The various characteristics and uses both for jewelry and industrial are outlined. Crystal formation is illustrated. Even the kind of terrain or deposits in which it is likely to occur is also described and discussed.

The book covers 126 common and rare minerals, described in a manner combining simplicity and accuracy to make it a truly handy reference for the amateur while actually in the field.

E.D.C.

THE BOOK OF NATURE. By Arien Sluys. Published by Vantage Press, N.Y. 1959, 239 pp. $3.95.

This is not a "nature book" in the usual sense, but a deeply considered abstract study of Creation itself. The reader is led into the vast mysteries of space.

In bold, comprehensive picturization Mr. Sluys portrays all creation, from the first invisible ether-energy in spaceless-space, thru the evolution of that ether in the forms it took during the "first creation".

A new theological thinking is set forth and a new study of universal creation is developed. Much philosophizing on scriptural passage is done.

Throughout the book the author expresses sincere faith in the Creator of all things. "We should remember", he says, "that science is not the mother of theology; theology is the mother of science".

E.D.C.

DIAMONDS. Herbert S. Zim. Published by William Morrow & Company, Inc., New York. 1959. 64 pp. $2.50.

This latest of Dr. Zim's contributions to Morrow Junior Books is written in his usual clear style. Beginning with chemical composition, he orients his subject to coal and graphite. The extreme hardness of the diamond is explained by its physical structure and its brilliance by its high index of refraction. An interesting history of the discovery and cutting of the famous gem diamonds is followed by an explanation of the diamond's importance in industrial uses. Man's efforts through past centuries to synthesize diamonds are described, culminating in the success of General Electric's research in 1954. Illustrative sketches by Gustav Schrotter appear on every page and are a valuable adjunct to the text.

M.G.C.

TIME, LIFE, AND MAN: The Fossil Record. Ruben Arthur Stirton. John Wiley & Sons, Inc. 558 pp. 1959. $9.00.

Fossils have been objects of reverent interest to men for centuries. Early American Indians made necklaces of crinoid stems. They gave the name "thunderhorses" to the large extinct mammals whose bones they found on the Great Plains, and endowed them with mystical properties. The author suggests as justification for the interest to which he is heir that patterns of evolution and extinction followed blindly by plants and animals may, in man, be guided in the future by his intelligence and ethics. A more immediate value of the study of paleontology is its practical application in the fields of petroleum and mineral prospecting.

(*Continued on page* 101)

Midwest Club News

Mrs. Bernice Rexin, Club Editor
3934 N. Sherman Blvd.
Milwaukee 16, Wis.

INDIANA GEOLOGY AND GEM SOCIETY is making a county-by-county study of Indiana for the purpose of locating and pin-pointing all mineral and fossil collecting areas in Indiana. It will also endeavor to correctly identify and label all specimens that it obtains from these areas. This is a very important project, therefore if you have any information about collecting sites in Indiana, please help by sending the information to Mrs. Elsa Smith, 6840 Dover Road, Indianapolis, Indiana.

WISCONSIN GEOLOGICAL SOCIETY will hold a combined field trip on May 2nd with the Madison Geological Society and the Racine Geological Society. The societies will visit the Historical Museum in Madison and places of interest on the campus of the University of Wisconsin. A social meeting and swap session will follow the sight-seeing.

CHICAGO ROCKS AND MINERALS SOCIETY on March 14 viewed a two-part educational slide program, Introduction to Micromounting and Introduction to Crystallography, prepared by the Baltimore Mineral Society. It took the society about six months to make each set of slides and it is now working on a third series.

MINNESOTA MINERAL CLUB on Feb. 13 heard a very interesting lecture given by Dr. Paul Wright of Wheaton College, whose topic was "Things of Interest About the Black Hills of South Dakota."

On April 12 the club will hold its 14th annual gem and mineral show. This show is very popular with the residents of the Twin Cities.

CENTRAL IOWA MINERAL SOCIETY on March 6 heard Dean Vickroy, registered gemologist, discuss "Diamonds." A colored film, "A Diamond is Forever," was also shown.

HEART OF AMERICA GEOLOGY CLUB advises rockhounds, who haven't had a dog to exercise them during the winter, to get in shape for spring field trips by taking long walks. It also warns that gas formed in tumblers can be dangerous. Tests made by Clark Barb of the Colorado School of Mines show that this gas, possibly methane, is very inflammable. There have been reports of tumblers exploding.

EARTH SCIENCE CLUB OF NORTHERN ILLINOIS' four junior groups' third annual Junior Festival will be held on April 10 at Washington School in Downers Grove. Competitive exhibits of rocks and minerals will be judged by judges from six neighboring societies. The Downers Grove Juniors will feature the Pennsylvanian flora of the Wilmington area; the Brookfield Juniors will show the geological background and uses of diamonds; the Riverside Juniors will point out interesting features of a number of individual displays; and the Berwyn Juniors will give a demonstration of mineral identification and hardness tests.

The members of these junior groups are young people of junior high school age who are interested in the many fascinating fields of the earth sciences. They have enjoyed a series of interesting educational programs throughout this season and their activities have resulted in a very interesting group of exhibits. They will also have a display at the Midwest Federation of Mineralogical and Geological Societies Convention which will be held June 18-21, at Springfield, Ohio. The Miami Valley Mineral and Gem Club will be host to the convention. ESCONI was the host club in 1958.

NEBRASKA MINERAL AND GEM CLUB on March 18 viewed slides of the famous Carlsbad Caverns in New Mexico. The slides were made by professionals and are of superb quality. Included are pictures of the lovely flowers that bloom outside the caverns in the springtime; a shot of the cloud-like bat-flight that occurs when the bats come out to feed in the evening; and close-up views of the different varieties of bats that inhabit the cave.

On Sept. 26, 27, the society will hold its second annual show in the Omaha Civic Auditorium.

CENTRAL ILLINOIS ROCKHOUNDS on March 21, 22, held its seventh annual exhibit of gemstones, minerals, Indian relics, and sea shells. Admission was free and members were permitted to sell to the public.

On April 11 CIR plans to visit the fossil-bearing paleozoic outcrops in Massac and Pope counties.

MICHIGAN GEM AND MINERAL SOCIETY recently heard Robert Whiting of the Jackson Public Schools, speak on the "Glacial Era of Michigan."

A new feature of the club's bulletin, Michigan Gem News, is a page devoted to junior members. It will present educational articles on the earth sciences that are written for the junior reader.

(*Continued on page* 103)

Earth Science

JUNE, 1959 Vol. 12, No. 3

Flint Ridge Flint

by J. W. PAGNUCCO

With the Midwest Federation Convention to be held on June 18, 19, 20, and 21 in Springfield, Ohio, the nature and location of Ohio's famous Flint Ridge deposit may be of interest to MWF members from a geological, archeological, and lapidary point of view. This was the source of flint which ancient and historic Indians dug and made into artifacts. It is also the location of Ohio's only gemstone.

Flint Ridge is an irregular area about eight miles long and an average of three quarters of a mile wide in Licking and Muskingum Counties. It lies in beautiful, rolling, limestone country with valleys and shallow ravines. Prior to more recent water erosion, glaciation removed much of the original deposit excepting the plateau capped hills which cover a relatively small area of several hundred acres.

From a thickness of a few inches at the edges, the bed of flint thickens towards the center to a depth of six to ten feet. At most points, the flint is covered with a few inches to several feet of soil. Most of the area is overgrown with forest and underbrush but many of the ancient pits are still visible. The better material has come from a section within a half mile radius of the approximate geographical center.

Geologically, Flint Ridge lies in the Vanport member in the Allegheny formation of the Pennsylvania system. The bed is a vein-like mass of chalcedonic silica in its original position. It lies above coal measures and is also associated with marine limestones. The coal was formed under land conditions and is repeated every twenty feet. The limestones with

Mrs. Mae Rentzel is examining a large chunk of Ohio Jasp-Agate. Many specimens can be found. This one had quite an area of chalcedony and drusy quartz. Photos by Fred R. Rentzel.

and without flint were laid down about every fifty feet. Occasional low-order fossils may be found in the area.

The true origin and formation of flint are not well understood because they concern very dilute solutions of silica which is quite inert. However, it is evident that sufficient amounts of silica were dissolved in the waters which perhaps were alkaline as well as hot. The silica in colloidal solution was carried by streams to the ancient sea which covered this part of the country. The amount which was transported was the greatest during periods when the lands were relatively low. The silica tended to collect in quiet waters and was precipitated rapidly as a gelatinous mass after suitable conditions developed. Subsequent changes involved loss of water by evaporation, then contraction, solidification and hardening. At some time in the early stages iron compounds gave the formation its variety of colors. Later nature treated the hardened flint harshly as indicated by the excessive amount of material which is brecciated and fractured.

The properties in Flint Ridge are owned by local tenants, the State of Ohio, and the Ohio Historical Society. The site is about eighty-five miles east of Springfield and north of US 40 at Brownsville on route 668. Collecting is highly restricted in the entire area except on the surface of the shoulders and right-of-way of the gravel road which is opposite the entrance to the State Park. Permission must be obtained to collect in other areas.

Because there is no general agreement on exactly what flint is, it may be well to discuss its characteristics and nomenclature before further discussion of Flint Ridge flint. Chemically and essentially, flint is an impure silica with a cryptocrystalline structure. It has a hardness of seven but is the toughest and perhaps the hardest of the common minerals. It can be chipped with a conchoidal fracture in any desired direction, weighs slightly less than vitreous quartz and is quite weather resistant.

Archeologists generally consider flint to be any rock with a conchoidal fracture whether it is novaculite, chalcedony, jasper, or good hard chert. Geologists on the other hand, state that no real flint occurs in the United States and that England is one source of genuine flint. As a matter of interest, English material is made into gun flints for use by African tribes.

Some years ago, Mr. Holmes Ellis of the Ohio State Museum, attempted to establish criteria whereby the many varieties of siliceous rocks used for arrowheads could be clearly distinguished from each other. It became apparent that authorities did not always agree upon what represented a specific type of material. For example, what one person called flint would be termed chert by another and, similarly, novaculite might be also called chalcedony. It was suggested, therefore, that archeologists label them all under the general term flint. Then, as specific varieties could be identified on the basis of source and characteristics, they might be identified further as a specific type. On this basis then, a specimen from Flint Ridge would be known as Flint Ridge flint while one from Kay County, Oklahoma would be called Kay County flint, and so on. Thus, instead of questioning whether Flint Ridge flint was a true flint, chert, jasper, or chalcedony, it would be called simply Flint Ridge flint. As a matter of information, there are other sources of flint in Illinois, West Virginia, Missouri, and Texas which differ in origin and characteristics.

Historically, the oldest flint from Flint Ridge was found in the form of artifacts in the mounds of early aboriginal Indians of Kentucky, Ohio, and other eastern states. Carbon 14 determinations on materials from the mounds showed their age to be approximately 5110 years old which would place their date at about 3150 B.C. Investigations have shown that it was quarried and traded continuously from that time up to and including the

period of historic Indians. Being a strategic material, to use current terminology, this flint was traded over a wide area as indicated by specimens found as far east as central Pennsylvania, west as far as western Kansas, south as far as lower Georgia and north as far as southern Wisconsin. In present day trading among collectors, genuine Indian artifacts made from Flint Ridge flint are in constant demand. The colored varieties are the most valuable. The collector is cautioned about accepting modern imitations.

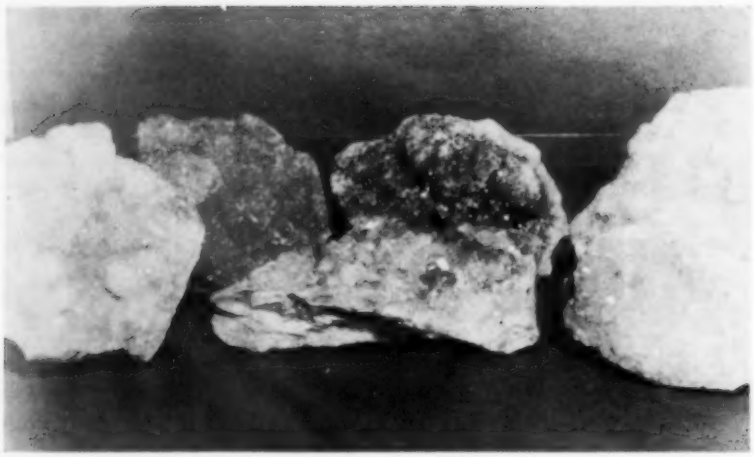
Because Flint Ridge was an important source of good flint, all tribes and nations considered the site to be an open and neutral area for quarrying. There is no evidence to indicate that warring peoples destroyed or owned any part of the deposit. As a matter of fact, war points or fortifications have not been found within a radius of two miles which suggests that there had been no battles for possession of the Ridge.

The earliest workings were around the perimeter of Flint Ridge where presumably the least effort was required. One method consisted of undercutting an edge of the rock mass, heating it with fire and then dropping boulders on the ledge to break off the flint rock. After removal of the broken material the face was worked.

A later method of quarrying further illustrates the patience and intelligence of the ancient Indian. Because the flint deposit lies between one to four feet of clay and a lower strata of limestone, pits were dug by hand as deep as possible. Then successive fires and quenchings were made to fracture the rock. After digging through the flint by this means, the walls were insulated with plastered mud to minimize further breakage. Firing, quenching, and removal of rock were continued sufficiently deep into the limestone to allow the flint bed to be undercut. The ledge was then broken off with heavy stone mauls or with boulders or granite balls dropped from the surface. One of the large balls, when found, weighed seventy-five pounds, smaller ones weighed two to three pounds.

After laborious work in the pits, rough chipping and selection in the work shop areas nearby to reduce transportation of waste rock, only about ten percent of the original flint was taken to camp sites where the artifacts were made. This flint was choice material in that it had uniform hardness and consistency and could be flaked easily. Some of it was colored. The typical, mottled, grey Hopewell flint came from a small area of about one square mile.

One of the Indians' digging pits. The Indians knew that the best flint for arrow making was underground. Some of these pits are only a few inches deep, others large. Depth of this one is nearly 15 ft. Always good hunting in bottom where you see Mrs. Rentzel.



This portrays some of the quartz crystal on Jasp-Agate that you will find on your field trip. They range in size from small drusy to (if you are lucky) ¾ in. Sometimes in hues of green, blue, red, and yellow—clear & smoky.

The discarded pieces and chips, large and small, on or near the surface of the ground were left unknowingly and fortunately for modern man's collecting and pleasure. It is said that until not too long ago there was so much blank and rejected material that farmers had difficulty in plowing. This is not true at the present time, however. Obviously all of the deposit was not removed by the ancient natives. Excellent and untouched flint remains for the finding and digging but only if permission is obtained. It is interesting to note that white settlers early in the nineteenth century appreciated the high quality of this flint and quarried it for buhrstones which were used locally for grinding grain. Their use for this purpose extended as far west as the Mississippi River.

To the collector and lapidary, Flint Ridge flint varies widely in character, color, hardness, and density and does not permit classification. The colors include white, grey, pink, red, yellow, green, and brown. Specimens may or may not include chalcedony, jasper, translucent agate or quartz lined cavities and may be colorfully banded. Perhaps the rarest piece would contain amethystine colored quartz crystals. But notwithstanding imperfections, excellent cabinet specimens and plenty of good cutting material has been found.

For cutting and polishing, the flint should be waxy, dense and free from cracks and pits. It is as hard as agate to saw, grind and sand but a superb polish can be obtained. Tin oxide or chrome oxide slurry with a little Linde A added to either one gives good results on a felt wheel or leather disc. Some cutters use diamond paste on a wood lap. Being hard, the stone will become heated rapidly if proper precautions are not taken. Colorful cabochons with interesting and unusual pictures or designs have been made from Ohio's only gemstone.

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(*Continued on page* 100)

A New Look at an Old Rock*

By ROBERT H. SHAVER

MANY millions of years ago, there lived in an ancient sea which spread far over the American Midwest, an amoeba-like protozoan whose name was *Endothyra baileyi.* No larger than a pinhead, six million of his kind could fit into a top hat! But what an unlikely home, you ask, for one so small. How could *Endothyra* hope to survive in the vast impersonal sea where wayward currents carried him to hostile waters, where waves wafted him forward to leave him dry upon the strand, where the predatory crustacean and other monsters (to *Endothyra* you may be sure) with hearty appetites ever lay in wait, and where death is more common than life?

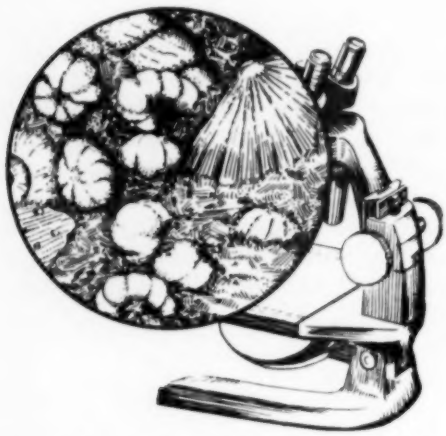
Many species are no larger than a pinhead.

Fortunately, *Endothyra* was no ordinary protozoan, for this presumptious single-celled speck of protoplasm had the wondrous power of secreting a calcareous shell about himself and into which he could retreat in order to foil some of his less well-equipped adversaries. The young endothyroid shell had but a single chamber, and, with growth, a new chamber was added from time to time after the manner of the fabled pearly nautilus. The series of chambers coiled upon itself so that the adult shell had two or three whorls. No doubt *Endothyra* laughed from his shell at all but the most abrasive forces when he was caught up in the turbulence of the sea. Still, the sea and his enemies must have been hard on *Endothyra,* and he surely needed yet another trick if he was to be successful in the game of life.

Successful he was indeed—at reproduction in unbelievably large numbers. Not restricted by the more modern expedient of first finding a mate, *Endothyra,* by division of his protoplasm, created not merely one but scores of new lives at a single reproductive cycle. Looking at it another way, who can say that *Endothyra* ever died? At any rate, if an *Endothyra* failed in his quest for life, there were myriads more to fill the void, and each, when his life cycle had been run, contributed the shell to posterity, perhaps to be dissolved or abraded seemingly to nothingness, and yet to be available for another life cycle, and still another—But wait a moment; many lifeless shells slowly settled to the sea floor to be shifted to and fro and from here to there, but at last to be buried by those which followed when each in its turn too had reached the time of passing.

*Published by permission of the State Geologist, Indiana Department of Conservation, Geological Survey. Illustrated by Robert E. Judah.

And along with *Endothyra* and his enemies lived many other shelled creatures who led equally perilous lives, and each of these made life perilous for one or more of his cohabitants according to the order of things upon this earth. So through the centuries and then millennia, the shells of *Endothyra* and his fellow creatures came to rest upon the sea floor and mingled together to build up into banks and layers scores of feet in depth. There were corals, lamp shells, snails, clams, moss animals, sea lilies, sea buds, and crustaceans, but in this particular sea *Endothyra baileyi* lived in perhaps greater numbers than any of his shelled contemporaries.—



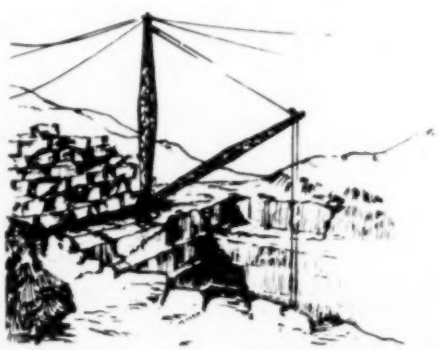
The collector need only a simple binocular microscope to discover a new unseen world.

Many millions of years later, when the great sea had washed its last upon the American heartland, and when its life long since had gone its way, a new kind of life came to the Midwest—men, some of whom built houses and cities of stone. They found one kind of stone particularly to their liking, a limestone which crops out upon the surface of the earth in a narrow belt extending in Indiana from the Ohio River northwestward to the west-central border. This stone is uniform, is of sufficient thickness, and can be easily cut in any direction. Of pleasing soft colors in gray, buff, and tan, the stone soon was arranged into many houses, churches, and universities in cities and throughout the American countryside. It graced huge public buildings in a great city called Washington; in another great city one orderly pile of this stone was named the Empire State Building. So useful did the stone become that a sizeable industry was founded upon it, and two south-central Indiana counties became the world's largest producing area of building limestone. The value of this stone produced during 1957 by 3,500 employees in Indiana was nearly 20 million dollars.

Let the reader take another look at our building stone—a look through the microscope—and he will confirm what he has already guessed: These two events—the episode of *Endothyra* on the one hand and the founding of an industry many millions of years later on the other—are very much connected. The building stone, better known around the world as Indiana or Salem Limestone, is also the stone of *Endothyra!*

Surely *Endothyra* found great strength and beauty in numbers and did survive to become fitting monuments to a vast and departed geologic age. Let the reader find what lesson he will and judge as he will on the immortality of *Endothyra baileyi.*

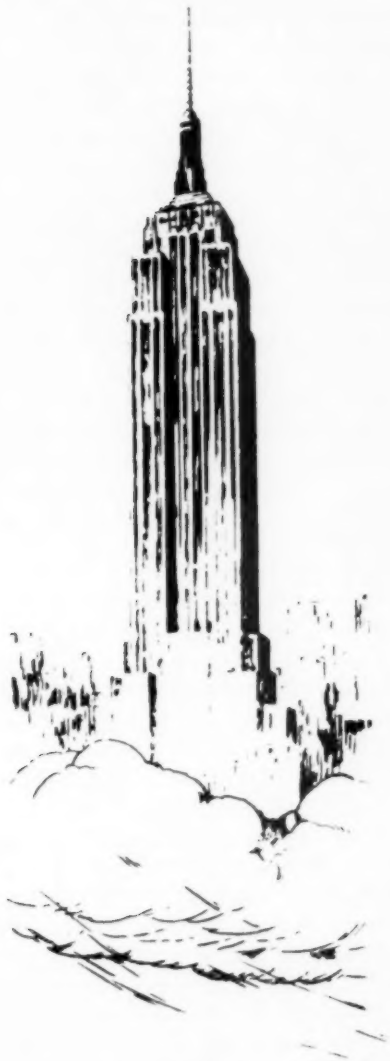
Editor's note.—The author tells us that the Salem Limestone is an interesting subject for the attention of rockhounds and that the wooded hills of southern Indiana are a pleasant setting for field trips to nu-



Man found this stone particularly to his liking.

merous collecting localities. Bugpickers can scoop up the disintegrated material on the floors of abandoned quarries or scale off the coarser crumbling limestone from the walls of quarries and other cuts. Three good sites are:

1. C. I. & L. Railroad cut at Spergen Hill, 0.5 mile north of Indiana Highway 160, and immediately south of the village of Harristown, Washington County (S½, sec. 24, T. 2 N., R. 4 E., Salem Quadrangle).



Empire State Building. Man's gigantic monument to Endothyra.

2. Cleveland quarry, abandoned, 1.0 mile on the secondary road north of Harrodsburg, Monroe County, and 300 yards west of the road in woods (NW¼, sec. 20, T. 7 N., R. 1 W., Clear Creek Quadrangle).

3. Southern Railroad cut, 0.5 mile south of Indiana Highway 64, 1.6 miles southwest of Georgetown, and 0.2 mile north of a gravelled road crossing, Harrison County. The cut is reached by going 1.6 miles from Georgetown on macadam and gravelled road and keeping right at two Y-junctions en route (SE¼, sec. 31, T. 2 S., R. 5 E., Georgetown Quadrangle).

The collector needs a simple binocular microscope for study of the unusual Salem fauna. To begin, boil the disintegrated material slowly for 20 minutes in water and washing soda or a strong detergent and then filter the finest fractions through a very fine screen mesh. Dry and sort the coarser material into species by observing it with the microscope or a reading glass and by using a small, fine-bristled brush. Fix the specimens to cardboard microslides, as are used by paleontologists, by applying each fossil with the brush which has been moistened in a solution of gum tragacanth or has been rubbed on sealing tape. The experienced collector immediately recognizes beautiful miniatures of brachiopods, pelecypods, gastropods, blastoids, and others, as well as the normally microscopic fossils such as forams and ostracodes. The especially curious collector can name his species by referring to the illustrations by Cumings, Beede, Smith, and Branson (Fauna of the Salem Limestone of Indiana, 30th Annual Report of the Indiana Department of Geology and Natural Resources, 1906).

MEERSCHAUM: Pipes of the kind favored by Sherlock Holmes are made from meerschaum, a soft white mineral which dries and hardens when exposed to the sun. The center of meerschaum mining is in Eskisehir, Turkey.

What Is a Mineral?*

A. R. CROOK, (1864-1930)

MINERAL composition may be very simple, or on the other hand it may often be very complex. It may be composed of but a single element, of which there are 92 known varieties, or two or more elements which are intimately associated together as a natural chemical compound.

In respect to the individual elements we find that while there are about two dozen which may occur "free" or uncombined in nature (called native elements) not more than twelve are common. These are: diamond, graphite, sulphur, arsenic, antimony, bismuth, gold, silver, copper, mercury, platinum and iron. The whole fabric of civilization depends upon iron, copper, gold, and other metals, and upon coal, petroleum, building stone and clays.

The use of minerals is an index of civilization. Man is the only member of the animal kingdom to utilize minerals as such; and the more primitive his place in human society, the less does he do so. Some minerals occur in extensive deposits, while others are scattered here and there. While more than two thousand minerals probably exist, only about one hundred are common enough to claim our attention. Many of these have numerous varieties, quartz for instance alone has more than one hundred, each having characters sufficiently distinctive to identify.

It is surprising how many people, while having a general idea of the subject, are unable to say just what a mineral is. Upon investigation they learn that a mineral is a natural, inorganic, homogeneous, solid, liquid, or gas. When solid, it is usually crystallized. Artificial substances such as are produced in laboratories, chemical plants, casting foundries, etc., are excluded from the definition, although they often show perfection of form and purity of constitution. Mineralogy is wholly concerned with natural products.

The inorganic excludes all forms of living substance — everything that grows by internal activity, that has the power of assimilation and reproduction, that has sensibility and usually slight chemical stability. A mineral may, however, have had an organic origin. For example, the carbon of a piece of graphite may have been at one time in a tree. The tree died and with the loss of oxygen and hydrogen was converted into peat. The loss of oxygen and hydrogen continuing, the peat or lignite was changed into bituminous coal, then into anthracite, and finally into graphite. It is not the origin but its present condition which places a substance in the mineral kingdom.

The term homogeneous indicates that the substance throughout is the same at one point as another, has the same arrangement, and shows the same properties. This separates a mineral from other inorganic substances such as rocks. A rock is made up of a mass of minerals, of two or more species, arranged in either definite or indefinite proportions.

Usually a mineral is a solid. Some minerals—for example, water and mercury—are ordinarily liquid but may be changed into solids by freezing: water at 32° and mercury at —40° F. All minerals are solid under certain conditions.

Minerals are usually crystallized; that is, they have a definite internal structure which is often shown by their external form. There are a few exceptions, such as turquoise and opal, and other substances which are solidified from gases or liquids so rapidly or under such other unfavorable conditions that the molecules are unable to properly arrange themselves. These minerals are said to be amorphous.

They may be regarded as minerals that are unsuccessful or are of weak molecular attractions.

Ordinarily a mineral has just as definite a shape as has a bird or a flower. It has less opportunity than a flower to develop a perfect external form, since it is usually crowded by its neighbors. The growing crystal soon reaches a place where its planes touch those of its neighbors and its perfection is impaired. But though the bounding planes are distorted and irregular, the internal arrangement is so orderly and definite that the smallest fragment has the same structure as a perfect crystal.

This regularity of architecture in the mineral world is a fact of far-reaching importance. It discloses one of the great laws of the universe, a law as beautiful and universal as the law of gravitation, the conservation of energy, or the development of species.

The law of crystallization affects every particle of mineral matter in the world, and more than that, in the universe as well. The results are seen alike in the minutest forms and on a gigantic scale. The most beautiful colors in the world—the pure colors of the spectrum—are exhibited by minerals in accordance with this law.

Minerals are the most abundant and most valuable substances in the world. If all the vegetation in the world—the great masses of weeds in Sargasso Seas, the myriads of land weeds, the flowers and grains, all the trees of the mighty forests—if all of these were placed in an immense pile and to this pile were added all the lower animals, all mankind, and all the buildings in the world, the mass would be gigantic. But, if in another pile were heaped the minerals of which the world is composed, the first pile would be as a grain of sand to a mountain, so small as to be well-nigh invisible. In quantity minerals are of the greatest importance.

In quality the same is true. They are unsurpassed in enduring beauty and value. Some diamonds like the Kohinoor, Regent, or the Cullinan are valued more highly than any other objects of the same size in the world. A ruby worth half a million dollars is so light in weight that it could be sent by mail across the continent for four cents. Mineral ornaments such as vases, tables, and columns in the palaces of the wealthy and in the great museums will remain unchanged in beauty and pleasure-giving power for many long centuries. Minerals are as beautiful as flowers and infinitely more permanent.

Though the same sun with all diffusive rays
Blush in the rose and in the diamond blaze,
We prize the higher effort of his power
And justly place the gem above the flower.[1]

An acquaintance with minerals is useful in many trades and professions. The doctor of medicine and the pharmacist may be interested in minerals as the source of drugs. The lawyer may be helped by some knowledge of mineralogy, especially in mining cases. The minister furnished by this science with an insight into the structure of the universe is better able to find "sermons in stones." From the study of the mineral composition of his soil the farmer is aided in soil improvement and in making "bread from stones." The physicist repeatedly uses minerals in his study of the laws of heat, light, and electricity. Even more dependent upon minerals as a source of materials for study and experiment is the chemist. For the geologist, the prospector, the miner, the assayer, and the metallurgist, mineralogy is a fundamental science, one without which they cannot well work.

Thus the mineral collections in any museum have a twofold claim upon the interest of the visitor: first, because they well illustrate the mineral resources of state, and country, and second, because they show the composition of the world and the uses which our people make of

(*Continued on page* 100)

For The ATTENTION of METEORITICISTS!

NININGER MAKES A SALE:—What may prove to be the largest sale of meteorites ever consumated was recently made when Dr. H. H. Nininger, noted meteorite authority and proprietor of the famous Meteorite Museum located in the town of Sedona on U. S. 89A, south of Flagstaff, Arizona, sold a large collection of meteorites to the British Natural History Museum, of London, England.

This purchase which was made with a grant given by the British Nuffield Foundation, included 197 "Falls" not previously listed in the catalogs of this great institution, and makes this undoubtedly the largest collection in Europe, and among the largest in the entire world.

From London sources, we learn that the amount of the grant was 50,000 pounds sterling,—or approximately $140,000 in American money, which makes this a sizable deal from any viewpoint. For those who might fear that this sale will greatly deplete the size and importance of the Nininger collection, we might add that on last count the American Meteorite Museum collection contained examples of 1,034 Meteorite Falls, or about 67 per cent of all those that are known, with many new additions being added to it every year. Congratulations Dr. Nininger!!

* * * *

SIBERIAN METEORITE SPECIMENS INSPECTED:—An event of unusual significance took place at the annual meeting of the American Meteorite Society held at the Meteor Crater Museum, Winslow, Arizona, August 30th, 1958, when members present were privileged to inspect for the first time in America, specimens of the Great 1947 Siberian Meteorite fall, which event was without doubt one of the highlights of the convention.

The specimens which are now on display at Meteor Crater Museum, were acquired recently from Dr. E. L. Krinov, leading Russian meteoriticist, in a scientific barter deal arranged by Brandon Barringer, Philadelphia publication firm executive. George E. Foster, curator of the museum said the highly publicized 1947 fall was one of the two greatest meteorite falls of modern times, the other, which also took place in Siberia, occurred in 1908.

* * * *

NEW METEORITE FOUND IN EGYPT:—A new meteorite find of unusual importance has been reported in Volume II, No. 1 (1958) of the Egyptian Journal of Geology, found by a nomad in the Western Desert of Egypt about 30 kms. to the west of Aswan, approximately at Latitude 23° 59′ 10″ North, Longitude 32° 37′ 25″ East. It was found along the road leading from Aswan to Kurkur, the latter being a small oasis located 60 kms. southwest of Aswan. In April, 1955, the meteorite was given to the authorities of the Egyptian Iron and Steel Company at Aswan, where it is kept at present.

Examination of a few polished sections of the meteorite shows that it is an iron meteorite with the nickel iron mineral, Kamacite vastly predominating. As no characteristic structure is observed, while its nickel content is 5.69 per cent and its iron amounts to 92 per cent, the Aswan meteorite is classed as a nickel-poor ataxite.

"It is important to draw attention to the fact that the Aswan meteorite is the first to be recorded in the Western Desert, although silica glass of suggested meteoric origin is abundant in the Sand Sea area in the Western Desert." Search here may lead to the discovery of other meteorites, thus contributing to the solution of the problem of the silica glass,—(tectites).

* * * *

"CHUBB METEOR CRATER" NOW RENAMED: In our July 1952 issue of Earth Science we were privileged to publish an article on the "Chubb Crater" by Dr. V. B. Meen, Head of the Geology and Mineralogy Division, Royal Ontario Museum, Toronto, which gave a most excellent description of this great discovery on the far North Ungava Peninsula of upper Quebec.

The physical features (symmetry) of this enormous crater, were first called to the attention of Dr. Meen, by F. W. Chubb, for whom it was named, and a member of airborne reconnaisance expeditions into the arctic who suggested it to be of meteoric origin rather than volcanic. As such it now ranks high in the category of such phenomena.

For more or less obvious reasons the early name "Chubb Crater," has by most authorities been supplanted by "Quebec Crater," giving it a geographical, rather than an individual connotation. For those who may be interested in reading more about this important discovery, we are listing the following references which will prove invaluable.

BIBLIOGRAPHY

Meen, V. B., (1950)—"Chubb Crater," Ungava, Quebec, Jour. Roy. Astr. Soc. Can., Vol. 44, p. 169.

——— (1951a)—"The Canadian Meteor Crater," Scientific American, Vol. 184, No. 5. p. 64.

——— (1951b)—"Chubb Crater," Ungava, Quebec. Proc. Geol. Assoc. Can. Vol. 4, p. 49.

——— (1952)—"Solving the Riddle of Chubb Crater," Natl. Geographic Mag. Vol. 101, p. 1.

——— (1952)—"Chubb Grater." Earth Science Digest Magazine, July '52, p. 15.

——— (1957)—"Chubb Crater"—A Meteor Crater. Jour. Roy. Astr. Soc. Can. Vol. 51, p. 137.

We also recommend for your reading, "The Merewether Crater, a Possible Meteor Crater," by Dr. Meen, published in Vol. 9, Dec. 1957,—Proceedings of the Geological Association of Canada. A most interesting article, concerning another great crater markedly similar to the Chubb Crater above annotated.

* * * *

NATIONAL SCIENCE FOUNDATION.—Few of our readers, we fear, are aware of the many important services afforded our scientific personnel, (including Geologists and just plain Rockhounds generally), that we are taking the liberty of calling your attention to the latest (January 1958), "List of International and Foreign Scientific and Technical Meetings."

This 50 page brochure not only contains the list of hundreds of meetings of almost every conceivable type, but also their dates, place, purpose and auspices running from January 1958, through to the close of 1962. If you should be interested, single copies may be had for 35c domestic (45c foreign), from the Superintendent of Documents, U.S. Printing Office, Washington 25, D.C., or on the annual subscription basis for $1.25 per year.

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EARTH SCIENCE SPECIALTY LIST: The following Earth Science Specialty List used in the questionnaire sent out by the National Register of Scientific and Technical Personnel will be of great interest to many of your readers, and to Earth Scientists and Rockhounds generally. As will be seen it contains the names of many of the less known branches of our science, which some of us may never even have heard of.

Earth Science is indeed a very broad subject, and as may be here observed has almost innumerable ramifications extending into the fields of Astronomy, Physics, Chemistry and Biology. In fact it has often been said to be the foundation or fundamental subject around which much other scientific knowledge has been accumulated.

Earth Sciences

300—GEOPHYSICS (General)
301—Seismology
302—Terrestrial magnetism & electricity
303—Physics of the upper atmosphere
304—Exploration geophysics, petrol. & natural gas
305—Exploration geophysics, mineral deposits
306—Instrumentation
307—Geodesy
309—Other (specify)

310—GEOCHEMISTRY (General)
311—Chem. of natural waters
312—Chem. of carbonaceous materials
313—Chem. of rocks & minerals
314—Isotope geol. & radioactivity
319—Other (specify)

320—GEOLOGY (General)
321—Areal & field geology
322—Mineralogy, determinative
323—Mineralogy, crystallography
324—Sedimentary petrology
325—Igneous petrology
326—Metamorphic petrology
327—Invertebrate paleontology
328—Vertebrate paleontology
329—Paleobotany
330—Micropaleontology
331—Stratigraphy
332—Structural geol., igneous & metamorphic
333—Structural geol., sedimentary
334—Economic geology, metals
335—Economic geol., non-metals
336—Economic geol., ground-water
337—Economic geology, coal
338—Petrol. geol., surface exploration
339—Petrol., geol., subsurface
340—Petrol., geol., other
341—Engineering geology
342—Military geology
343—Geomorphology
344—Other (specify)

345—HYDROLOGY (General)
346—Surface streams & lakes
347—Ground-water hydrology
348—Cryology
349—Other (specify)

350—OCEANOGRAPHY (General)
351—Dynamic oceanography
352—Physical oceanography
353—Chemical oceanography
354—Ocean-bottom sediments
355—Beach & shore processes
356—Underwater sound
359—Other (specify)

(*Continued from page* 97)

minerals to increase the comfort of living and their happiness.

The visitor or student will naturally begin his inspection of any collection with the minerals that are the most simple in their composition—those that are composed of but one chemical substance, the so-called elements, and from there he will proceed with his investigation of those which are much more complex, and those which are rare and valuable.

A fine collection of minerals whether it be in some museum, large or small, or in the hands of some individual collector, or just plain "rockhound", is a valuable contribution to our educational advantages, and no one should fail to avail themselves of the opportunity of viewing and studying such collections whenever and wherever it is possible.

Our experience has been that in every collection, be it ever so small or unimportant, one may usually see something unique and different, or even better, than any specimen of the kind he has seen elsewhere. There are few exceptions to this rule.

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*Exerpts from the writings of A. R. Crook (1864-1930). Abstracted and slightly revised by Ben Hur Wilson.

[1]Alexander Pope

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(*Continued from page* 92)

"FLINT RIDGE, OHIO", Marie S. Riley, Rocks and Minerals, August, 1947.

"SOME GEMS OF OHIO", H. V. Schiefer, The Mineralogist, April, 1949.

"ARCHEOLOGY OF EASTERN UNITED STATES", James B. Griffin, University of Chicago Press, 1952.

"ARROWHEADS", Dr. Robert E. Bell, Oklahoma Archeological Society News Letter, Vol. 3, No. 6, December, 1954, Reprinted in the Earth Science News.

"ARCHEOLOGICAL FLINT", Report by S. Barrick on a talk by Dave Wenner, the Earth Science News, July-August, 1955.

"INDIANS AND FLINT RIDGE, OHIO", Sam Wilt, Miami Valley Mineral and Gem Club Bulletin, January, 1957.

U.S.G.S. Topographical Maps, Thornville, Zanesville, Newark, and Frazeysburg quadrangles.

(*Continued from page* 86)

Dr. Stirton is Professor of Paleontology at the University of California, Berkeley, but his activities have not been confined to the classroom. He has led exploratory expeditions to Australia and to Central and South America, and is credited with important paleontological discoveries.

The book is designed primarily as a text for an introductory course in paleontology. In the early chapters the objectives of the science are defined, and its relation to other sciences, search for and preservation of fossils, and their value as evidences of evolution in plant and animal life are discussed. These are followed by an interesting chapter on the History of Paleontology, with emphasis on the men who made important contributions to its progress and to the climates of thought, often hostile, in which they tried to interpret their observations. The great geologic eras, from pre-Cambrian through Pleistocene, are then reviewed and plant and animal life traced against the background of geological changes. Each of the last 9 chapters is devoted to a special subject such as Evolution of Horses, the Dinosaurs, Cephalopods and Ammonites, Prehistoric Men, etc.

Lucid writing and helpful illustrations make this a book for the general reader as well as the student.

MGC

EXPLORATIONS EAST OF THE HIGH ANDES, by Victor Oppenheim. Pageant Press, Inc., New York. 1958. 267 pp., $5.00.

This book relates some of the journies, experiences, and observations made by the author, traveling as a professional engineer and geologist while consultant to various South American governments, mining, and petroleum companies. The particular expeditions described herein were carried out in Argentina, Bolivia, and Peru.

Mr. Oppenheim is an internationally known scientist who dedicated many years to the geological study and exploration of South America.

For those who may be curious as well as for those who might be interested in some of the geological features of the hitherto unexplored or little known regions of the Andean Cordilleras, the Andean mountain chain, this book is your answer. It comprises breathtaking descriptions of savage terrains, native tribes, and wild animals, ranging from the bitter cold of the highest mountainous regions in the Western hemisphere to the broiling heat of the dense, impenetrable tropical jungles far below. Interesting facts are related all along the way, concerning the different types of people who inhabit each area, their customs, mode of living, etc. A brief history is also given as a basis of comparison of the areas occupied by the modern South American nations from the days before the arrival of the Spanish right up to the current political upheavals.

To the reviewer, this is an exciting, stimulating, and authoritative book. It comprises valuable explanations of events and conditions of our southern neighbors who are playing increasingly important roles in international affairs. E.D.C.

ECONOMICS FOR THE MINERAL ENGINEER. Edmund James Pryor. Pergamon Press, 254 pp. $6.00.

Having a gold mine in one's back yard, or anywhere else, from which wealth can literally be shoveled, has always seemed like a simple way to ensure that one's earthly wants would be met. After reading Mr. Pryor's book, this reviewer is not so sure. In practice, successful operation of a mine has become a complex enterprise. Although the author is associated with the Royal School of Mines, Imperial College of Science and Technology, London, his subject is international in scope and his experience and ideas are equally applicable on this side of the Atlantic.

Prospecting now makes use, not only of geology (unraveling of cosmic movements), but also of geochemistry and the new biogeochemistry (relation between vegetable growth and soil minerals). Besides plant layout and procedure, the author discusses the role of management, the relative value of individualistic vs. the team-type executive, and the status of the engineer. The chapter on marketing and pricing of a variety of metals is interesting, although even the one on mill records is not dull.

Because of the risks inherent in mining, the industry is entitled to special tax treatment, in the opinion of the author. England has failed to recognize this with the result that the

industry there is moribund. Canada, on the contrary, has adopted an enlightened policy of exempting mine production from tax for the first 3 years and thereafter permitting operating expenses to be charged against revenue.

The stakes are so high in a mining venture, association with one has brought out the worst as well as the best in men. The tricks by which a seller has inflated the value of his ore range from using gold dust in the blasting gelatine to injecting gold chloride into sealed samples with a syringe.

Useful addenda to the book are a glossary, bibliography, and index.

MGC

Midwest Club News

(*Continued from page* 87)

ST. LOUIS GEM AND MINERAL SOCIETY enjoyed a speleological holiday on March 14 when it visited the Onondaga and Meramec Caves.

The society has proposed to the State of Missouri that the massive formation at Graniteville, Mo., known as Elephant Rocks, be preserved as a state monument. It asks that all interested groups help support this project.

On May 16 the society will hold an auction of rocks and minerals at the home of its auction chairman, Charles Ozment.

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY was recently given a demonstration of tools and shown the proper technique of excavating an Indian site. This program was arranged by Charles Nash of the Museum at the Chucalissa Indian Village.

The 1959 MA&GS field trip schedule includes visits to five neighboring states. Trips will be made to Pontotoc, Mississippi; Magnet Cove, Arkansas; Marion, Kentucky; Southeastern Missouri; Margerum, Alabama; and St. Joe, Arkansas.

KALAMAZOO GEOLOGICAL AND MINERAL SOCIETY recently was taken on a field trip, via colored slides, through the Upper Peninsula and around the western shore of Lake Superior by Floyd Mortenson, regional vice-president of the Midwest Federation. Mr. Mortenson also included slides of beautiful minerals found in the region.

CHICAGO LAPIDARY CLUB will hold its ninth annual competitive gem and jewelry show on May 15-17. Competition is open to all lapidaries in the Chicago area. Prizes will be trophies, medals, or ribbons.

CENTRAL MICHIGAN LAPIDARY AND MINERAL SOCIETY plans to visit Clay Center, Ohio on April 19 to collect specimens of celestite, calcite and fluorite. The group also has tentative plans for a trip to Ontario, Canada to visit a salt mine near Windsor.

MICHIGAN MINERALOGICAL SOCIETY'S important new community relations committee has set up a speakers' bureau to provide lecturers for clubs, schools, etc. It will also welcome visiting gem and mineral clubs to the Detroit area. On March 21 it was scheduled to take the Grand Rapids Mineral Society on a tour of the Cranbrook Institute of Science.

OTHER SOCIETIES

OKLAHOMA MINERAL AND GEM SOCIETY reports that chunks of alabaster up to the size of a house are available along the newly graded portions of the expanded U. S. Highway 66 between Clinton and Sayre, Oklahoma; and that Permian pyramids (specimens of dolomite pseudomorphic after halite) may be collected in Oklahoma's Major County.

LINCOLN GEM AND MINERAL CLUB cordially invites all earth science and lapidary hobbyists to attend its gem and mineral show to be held Oct. 3 and 4 in Lincoln, Nebraska's new $1,500,000 National Guard Armory.

TOPEKA GEM AND MINERAL SOCIETY warns that snake bites are a field trip hazard during the warm weather and announces that treatment for persons bitten by poisonous Kansas snakes is available at nine poison control centers in Kansas. For a list of Kansas poison control centers, write the Kansas Poison Information Center, Evan Wright, Director of the Food and Drug Division, Kansas State Board of Health, Topeka, Kan.

BEXAR COUNTY MINERAL HOBBY CLUB on March 13 heard John Haywood of St. Mary's University, talk on "Geology." This was the first of a series of five lectures that Mr. Haywood is presenting to the club. Coming lectures are: "Geology and Rocks in General" on April 10; "Minerals and Their Formation" on May 8; "Fossils" on June 12; and "A Summary of Previous Lectures and an Explanation of Geological Maps" on July 10.

COMPTON GEM AND MINERAL CLUB on March 5 heard Norman Whitmore, geologist and mining engineer, give a talk entitled "Around the World in 84 Days." The 84 days is the time that it took Mr. Whitmore to visit

mines and collect minerals and gems in 26 countries. Most of the time was spent in Turkey which is one of the world's most fabulous mineral areas. The world's largest emeralds are found in Turkey.

SAN FRANCISCO GEM AND MINERAL SOCIETY announces that its annual show will be held in the Scottish Rite Auditorium, 1290 Sutter St., Oct. 17 and 18.

COLORADO MINERAL SOCIETY recently heard Calvin Simmons, amateur scientist and gem cutter, give an instructive talk on "Gem Faceting," which he illustrated with diagrams and oversize models. Mr. Simmons not only showed commercial equipment, but also the simple gadgets and improvisations that a hobbyist can make for himself at little cost. He stated that making your own faceting equipment and improvising and perfecting it over the years is half the fun, and warned that all too often the hobbyist's interest dies when he finally acquires the expensive factory equipment of his dreams; the challenge to his ingenuity is then gone, together with much of the fun the hobby offered.

RECOMMENDED READINGS

"Ivory Hunting in Alaska," by Clayton Rasmussen. February issue of *Rock Rustlers News*. Ivory comes from not only the elephant, but also from the walrus, narwhale, and the extinct mastodon and hairy mammoth. Fresh walrus ivory is found on Alaska's beaches and fossil ivory from mastodons and mammoths are being unearthed by the mining and construction companies in Alaska.

"Turquoise and the Amateur Lapidary," by Merril O. Murphy. February issue of the *Sooner Rockologists*. Guides the amateur lapidary through the many pitfalls that plague the novice lapidary's first attempt at polishing turquoise.

"Casting with Cuttle Bone," by Earl Christensen. A clear description of a simple and inexpensive method of casting silver.

"Pronouncing Vocabulary," Jenuary issue of *Rock Lore*. If you have trouble pronouncing mineral names, then this list of minerals with their phonetic pronounciations is for you.

"Tombstone Silver," Anonymous, December issue of *Jaspilite*. TV Westerners often give the impression that Tombstone, Arizona was a mecca for cowboys and rustlers, but the facts are that Tombstone was a mining town. It lies on a virtual hill of silver ore and it was the treasure from its mines that attracted the men who gave it its bad reputation. Today ore specimens from Tombstone are almost as rare as a new grave on Boothill.

Notice to Advertisers

Our advertisers are respectfully advised that the advertising deadline for the next issue will be June 10th for all NEW ADS. Deadline for REPEAT ADS and for NEW PLATES submitted will be June 14th.

ADVERTISERS' INDEX

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SEE PAGE 84 FOR FURTHER INFORMATION